

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A fastener assembly comprising:

a nut having a generally cylindrical body with a constant radius;

a base and a transition portion coupling the base to the body, the nut having a bore, the base having a base minimum thickness, and the transition portion having a transition minimum thickness greater than or equal to the minimum base thickness; and

an integral member defining a first opening on a first surface and second opening on a second surface, the integral member disposed around the base operably allowing some movement of the nut associated therewith but limiting the movement of the nut.

2. (Currently Amended) A cage nut assembly comprising:

a nut having a body, a depending base and a transition portion coupling the base to the body, the body and base defining a bore, the body having a constant body minimum thickness, and the transition portion having a transition minimum thickness greater than or equal to the body minimum thickness; and

an integral cage disposed about at least a around a substantial portion of said ~~[[nut]]~~base, wherein the integral cage provides a limited range of movement of the

nut within the integral cage and defines a first opening on a first surface and second opening on a second surface ~~an aperture~~ at least partially aligned with the bore.

3. (Currently Amended) An automotive vehicle assembly comprising:

an automotive vehicle component;

a nut having a body and depending base and a transition portion coupling the base to the body, the body and base defining a bore through the body and base, the base having a base minimum thickness, the body having a constant body minimum thickness, the transition portion having a minimum thickness greater than or equal to the body minimum thickness and greater than or equal to the base minimum thickness, the nut being a medium carbon steel Class 10 fastener; and

an integral cage disposed about at least a around a substantial portion of said [[nut]]base, the integral cage defining a first opening in a first surface and a second opening in a second surface, wherein the integral cage provides a limited range of movement of the nut within the integral cage, the integral cage being attached to the component.

4-5. (Cancelled)

6. (Original) The automotive vehicle assembly in accordance with Claim 3 wherein the body comprises a planar base and wherein the cage defines a pair of flanges which covers at least a portion of the base.

7. (Original) The automotive vehicle assembly in accordance with Claim 3 wherein the body has an exterior surface which is generally cylindrical in shape, the exterior cylindrical surface mates with an upper surface of the base, the interface of the exterior cylindrical surface and the upper surface is a defined concave radius; and wherein the nut defines a through bore, said through bore having a threaded region and at least one countersink.

8. (Withdrawn) The automotive vehicle assembly in accordance with Claim 3 wherein the body has an exterior surface which is generally cylindrical in shape, the exterior cylindrical surface mates with an upper surface of the base, the interface of the exterior cylindrical surface and the upper surface is a defined concave radius; and wherein the nut defines a through bore, said through bore having a threaded region and at least one countersink.

9. (Withdrawn) The automotive vehicle assembly in accordance with Claim 3 wherein the wall minimum thickness of the base, the body and the transition portion are substantially constant throughout.

10. (Currently Amended) A fastener comprising:
a one piece nut having a body and depending base, and a transition portion which couples the body and the base, the depending base having a base minimum thickness, the body having a constant body minimum thickness and base defining a bore; and

an integral cage having an upper surface and a lower surface, the integral cage defining an upper opening on the upper surface, a lower opening on the lower surface, and two pair of flanges bent to enclose at least a portion of the base,

wherein the minimum wall thickness of the transition portion is greater than the minimum thickness of the base.

11. (Cancelled)

12. (Original) The fastener of Claim 10 wherein the base is disposed on the upper surface of the cage.

13. (Withdrawn) The fastener of Claim 10 wherein the bore comprises a convex countersink surface.

14. (Original) The fastener of Claim 10 wherein the bore comprises a flat countersink surface.

15. (Original) The fastener of Claim 10 wherein the nut has a proof load of at least 100 mega-pascal.

16. (Currently Amended) A fastener comprising:
a nut having a body with a constant minimum thickness, the nut being a medium carbon steel Class 10 fastener;

a transversely extending base; ~~[[and]]~~

a transition portion, the body and base defining a bore therethrough, wherein a wall minimum thickness of the transition portion is greater than or equal to a minimum thickness of the base and greater than or equal to the minimum thickness of the body~~[[.]]; and~~

an integral cage having an upper surface and a lower surface, the integral cage defining an upper opening on the upper surface, a lower opening on the lower surface, and two pair of flanges bent to enclose at least a portion of the base.

17. (Currently Amended) A fastener comprising:

a nut having a body and depending base and transition portion, the body and base defining a bore, wherein a minimum wall thickness of the transition portion is greater than a constant minimum thickness of the body~~[[.]]; and~~

an integral cage having an upper surface and a lower surface, the integral cage defining an upper opening on the upper surface, a lower opening on the lower surface, and two pair of flanges bent to enclose at least a portion of the base.

18. (Cancelled)

19. (Original) The fastener of Claim 18 wherein the base is disposed on the upper surface of the cage.

20. (Withdrawn) The fastener of Claim 17 wherein the bore comprises a convex countersink surface.

21. (Original) The fastener of Claim 17 wherein the bore comprises a flat countersink surface.

22. (Original) The fastener of Claim 17 wherein the body is a cylinder.

23. (Withdrawn) The fastener of Claim 22 wherein the cylinder is tapered cylinder.

24. (Currently Amended) A fastener for coupling to an automotive body, said body defining a hole having a first diameter, the fastener comprising:

a body having a constant thickness, defining a threaded bore therethrough and a base, said threaded bore having a flat countersink having a first outer diameter which is greater than or equal to the first diameter, the flat countersink being configured to guide threaded fasteners into the threaded bore[.]; and

a cage having an upper surface and a lower surface, the integral cage defining an upper opening on the upper surface, a lower opening on the lower surface, and two pair of flanges bent to enclose at least a portion of the base.

25-26. (Cancelled)

27. (Currently Amended) The fastener of Claim 25 wherein the ~~member for regulating movement of the fastener~~ cage is defined on the automotive component.

28. (Currently Amended) The fastener of Claim ~~[[25]]~~24 wherein the body is a class 10 fastener.

29. (Currently Amended) The ~~[[cage]]~~ fastener of Claim ~~[[25]]~~24 wherein the ~~body comprises~~ base is a planar base and wherein the means for regulating movement of the fastener covers at least a portion of the base.

30. (Currently Amended) The ~~[[cage]]~~ fastener of Claim 24 wherein the body has an exterior surface which is generally cylindrical in shape, the exterior cylindrical surface mates with an upper surface of the base, and the interface of the exterior cylindrical surface and the upper surface is a defined concave radius.

31. (Currently Amended) The ~~[[cage]]~~ fastener of Claim 30 wherein the bore comprises a flat countersink surface.

32. (Currently Amended) The ~~[[cage]]~~ fastener of Claim 30 wherein the body is formed by a hot forming process.

33. (Currently Amended) The ~~[[cage]]~~ fastener of Claim 30 wherein the body is formed by a cold forming processes.

34. (Currently Amended) The fastener of Claim 30 wherein the body is heat treated.

35. (Currently Amended) The fastener of Claim 30 wherein the wall thickness of the body is substantially constant throughout.

36. (Currently Amended) A fastener construction for coupling a fastener to component, said component defining a hole having a first diameter, the fastener construction comprising:

a body defining a threaded bore therethrough, said threaded bore having a having a second radius and countersink having a first outer radius smaller than or equal to the first diameter, the countersink being configured to guide threaded fasteners into the threaded bore;

a depending base and a transition portion coupling the base to the body, the base defining a bore coaxial to the threaded bore, the base having a base minimum thickness and the body having a constant body minimum thickness, the transition portion having a transition minimum thickness greater than or equal to the body minimum thickness and the base minimum thickness;

a fastener disposed through the hole and within a portion of the threaded bore; and

a means for regulating the movement of the body with respect to the hole; and

an integral member which regulates the movement of the depending base with respect to the hole by enclosing a portion of the base, the integral member defining a first opening on a first surface and a second opening on a second surface.

37. (Cancelled)

38. (Original) The fastener construction of Claim 36 wherein the member has an upper surface and a pair of flanges configured to enclose at least a portion of said body.

39. (Original) The fastener construction of Claim 36, wherein the member is defined on the component.

40. (Original) The fastener construction of Claim 36, wherein the body is converted to a Class 10 fastener by hot forming operations.

41. (Original) The fastener construction of Claim 36 wherein the base is planar and wherein the member covers at least a portion of the base.

42. (Withdrawn) The fastener construction of Claim 36 wherein the body has an exterior surface which is generally cylindrical in shape, the exterior cylindrical surface mates with an upper surface of the base, and counter bore is a defined convex radius.

43. (Original) The fastener construction of Claim 36 wherein the bore comprises a flat countersink surface.

44. (Original) The fastener construction of Claim 36 wherein the body is formed by a hot forming process.

45. (Original) The fastener construction of Claim 36 wherein the body is formed by a cold forming processes.

46. (Original) The fastener construction of Claim 36 wherein the body is heat treated.

47. (Withdrawn) The fastener construction of Claim 36 wherein the minimum wall thickness of the body is substantially constant throughout.

48. (Withdrawn) A method of forming a fastener comprising:
hot forming a nut having a cylindrical body with an integral base, further forming a transition portion between the base and the body, the transition portion having a thickness which is greater than a thickness of the body; and
forming a cage about the nut.

49. (Currently Amended) A fastener assembly comprising:

a nut having a generally cylindrical body with a constant minimum body thickness and formed of a medium carbon steel;

a base and a transition portion coupling the base to the body, the nut having a bore, the base having a base minimum thickness, and the transition portion having a transition minimum thickness greater than or equal to the minimum base thickness, said transition portion defining a flat conical surface; and

a member operably allowing some movement of the nut associated therewith but limiting the movement of the nut by enclosing at least a portion of the base, the member defining a first opening on a first surface and a second opening on a second surface.

50. (Currently Amended) A cage nut assembly comprising:

a nut having a body, a depending base and a transition portion coupling the base to the body, the body and base defining a bore, the body having a constant body minimum thickness, and the transition portion having a transition minimum thickness greater than or equal to the body minimum thickness, said transition portion defining a flat conical surface; and

a cage disposed about at least a portion of said ~~[[nut]]~~base, wherein the cage provides a limited range of movement of the nut within the cage and defines ~~[[an]]~~ first aperture on a first surface and a second aperture on a second surface at least partially aligned with the bore.

51. (Currently Amended) A fastener comprising:

a one piece nut having a body with a constant minimum thickness and depending base, and a transition portion having a generally conical flat bore which couples the body and the base, the depending base having a base minimum thickness, the body and base defining a bore; and

a cage operable to enclose at least a portion of the base to restrict the motion of the nut, the cage defining a first opening on a first surface and a second opening on a second surface,

wherein the minimum wall thickness of the transition portion is greater than the minimum thickness of the base.

52. (Currently Amended) A fastener comprising:

a nut having a body;

a transversely extending base; [[and]]

a transition portion, the body and base defining a bore therethrough, wherein a wall minimum thickness of the transition portion is greater than or equal to a minimum thickness of the base and greater than or equal to ~~[[the]]~~a constant minimum thickness of the body, said bore defining a flat conical surface~~[[.]]~~ and

a cage operable to enclose at least a portion of the base to restrict the motion of the nut, the cage defining a first opening on a first surface and a second opening on a second surface.

53. (Currently Amended) A fastener construction for coupling a fastener to component, said component defining a hole having a first diameter, the fastener construction comprising:

a body defining a threaded bore therethrough, said threaded bore having a having a second radius and countersink having a first outer radius smaller than or equal to the first diameter, the countersink being configured to guide threaded fasteners into the threaded bore;

a depending base and a transition portion coupling the base to the body, the base defining a conical bore having a flat surface, the conical bore coaxial to the threaded bore, the base having a constant base minimum thickness and the body having a body minimum thickness, the transition portion having a transition minimum thickness greater than or equal to the body minimum thickness and the base minimum thickness, the depending base, transition portion and body comprising a medium carbon steel Class 10 fastener;

a fastener disposed through the hole and within a portion of the threaded bore; and

a means for regulating the movement of the body with respect to the hole by enclosing at least a portion of the base defining a first opening on a first surface and a second opening on a second surface aligned with the hole.